



ENVIRONMENTAL HEALTH & SAFETY FACT SHEET:
Protection of Vacuum Systems Used in Tissue Culture Work



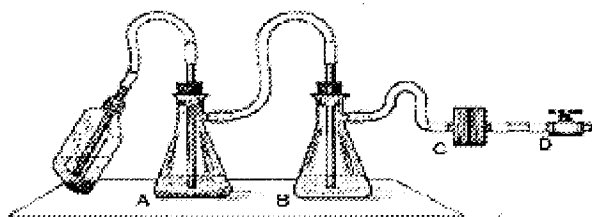
When laboratory vacuum is used to manipulate biohazardous materials, a suitable trap should be employed to insure that vacuum lines do not become contaminated. When vacuum is used, the system should include an in-line HEPA filter as near as practical to each point of use or service cock. An approved reservoir and filtration apparatus for vacuum systems is described below:

Vacuum filtration or aspirating supernatants into collection flasks are common laboratory procedures. During vacuum filtration or aspiration procedures building and/or laboratory vacuum systems should be protected.

A simple bench-top aerosol/fluid trap can protect building/laboratory vacuum systems. The basic vacuum trap consists of a disposable cartridge-type filter or equivalent installed in-line with a collection/overflow vacuum flask system.

The aerosol/fluid trap consists of two vacuum flasks, preferably autoclavable plastic, (size dependent on amount of fluid that may accidentally be aspirated out of the collection flask), thick walled plastic tubing (to prevent tubing collapse), rubber stoppers, a filter (prevents unwanted potentially biohazardous fluid and aerosols from entering vacuum systems), and a ceramic splarger (ceramic fish tank bubbler) immersed in disinfectant. The splarger disperses aerosols passing out of the collection flask into small bubbles so that adequate contact is made with a disinfectant solution. Use an appropriate disinfectant solution (such as bleach) shown to be effective on the biohazardous material under study. Add the chemical disinfectant to the collection flasks in full strength. Allow the aspirated fluids to complete the dilution. (For example: Start with 100ml bleach, aspirate 900ml fluids and discard). The two vacuum flasks (labeled with biohazard stickers) must be placed in secondary containment such as a plastic tub large enough to contain both vessels. The tubing to the vessels should be neat and not constitute a hazard in and of itself.

When the filter or overflow flask require routine changing, they can be safely removed by clamping the line between the filter and the vacuum source before disconnecting the tubing from the source. The filter and vacuum flask should be decontaminated by autoclaving if they have been in contact with potentially biohazardous material. These flasks should be emptied before they are 2/3 full. Replace the vacuum filter when it is clogged or if liquid makes contact with the filter. Check that all connections or seals are tight to assure the vacuum is adequate. See below for a method to protect a vacuum system during aspiration of infectious fluids. The left suction flask (A) is used to collect the contaminated fluids into a suitable decontamination solution; the right flask serves as a fluid overflow collection vessel. A glass splarger in flask B minimizes splatter. An in-line HEPA filter (C) is used to protect the vacuum system (D) from aerosolized microorganisms. See diagram:



CDC: Primary Containment for Biohazards: Selection, Installation and Use of Biological Safety Cabinets 2nd ed.

Suggested Product:

Whatman HEPA-Vent Filter

Assure sterile air for mixing, filling, storing, fermenting and transporting with this Whatman filter. Glass fiber filter is treated to be mildly hydrophobic; repels moisture, prevents bacterial growth; 0.3 μ m particle retention unaffected by autoclaving. Bidirectional flow. 16 cm² filter area.

Inlet/Outlet	Whatman #	Fisher Cat. #	Pack of 10	
1/4-3/8" tapered hose barb	6723-5000	09-744-79	\$96.48	(Jan 2010)

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